



## DEPARTMENT OF THE INTERIOR

### Fish and Wildlife Service

#### 50 CFR Part 17

[Docket No. FWS-R4-ES-2020-0062; FF09E21000 FXES1111090FEDR 234]

RIN 1018-BE55

### Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Pearl Darter

**AGENCY:** Fish and Wildlife Service, Interior.

**ACTION:** Final rule.

**SUMMARY:** We, the U.S. Fish and Wildlife Service (Service), designate critical habitat for the pearl darter (*Percina aurora*) under the Endangered Species Act of 1973 (Act), as amended. In total, approximately 524 river miles (843 river kilometers) in Clarke, Covington, Forrest, George, Green, Lauderdale, Jackson, Jones, Newton, Perry, Simpson, Stone, and Wayne Counties, Mississippi, fall within the boundaries of the critical habitat designation. The effect of this regulation is to designate critical habitat for the pearl darter under the Act.

**DATES:** This rule is effective [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** This final rule is available on the internet at <https://www.regulations.gov> and on the Mississippi Ecological Services Field Office website at <https://fws.gov/office/mississippi-ecological-services>. Comments and materials we received, as well as supporting documentation we used in preparing this rule, are available for public inspection at <https://www.regulations.gov> at Docket No. FWS-R4-

For the critical habitat designation, the coordinates or plot points or both from which the maps are generated are included in the decision file and are available at <https://www.regulations.gov> at Docket No. FWS-R4-ES-2020-0062 and on the Mississippi Ecological Services Field Office website at <https://fws.gov/office/mississippi-ecological-services>. Any additional tools or supporting information that we developed for this critical habitat designation will also be available on the Service's website set out above or at <https://www.regulations.gov>.

**FOR FURTHER INFORMATION CONTACT:** James Austin, Field Supervisor, U.S. Fish and Wildlife Service, Mississippi Ecological Services Field Office, 6578 Dogwood View Parkway, Jackson, MS 39213; telephone 601-321-1129. Individuals in the United States who are deaf, deafblind, hard of hearing, or have a speech disability may dial 711 (TTY, TDD, or TeleBraille) to access telecommunications relay services. Individuals outside the United States should use the relay services offered within their country to make international calls to the point-of-contact in the United States.

**SUPPLEMENTARY INFORMATION:**

**Executive Summary**

*Why we need to publish a rule.* To the maximum extent prudent and determinable, we must designate critical habitat for any species that we determine to be an endangered or threatened species under the Act. Designations of critical habitat can be completed only by issuing a rule through the Administrative Procedure Act rulemaking process (5 U.S.C. 551 et seq.).

*What this document does.* This rule designates a total of 524 river miles (843 river kilometers) of critical habitat for the pearl darter in the Pascagoula River and Pearl River basins in Mississippi. We listed the pearl darter as a threatened species under the Act on October 20, 2017 (82 FR 43885, September 20, 2017).

*The basis for our action.* Section 4(a)(3) of the Act requires the Secretary of the Interior (Secretary) to designate critical habitat concurrent with listing to the maximum extent prudent and determinable. Section 3(5)(A) of the Act defines critical habitat as (i) the specific areas within the geographical area occupied by the species, at the time it is listed, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protections; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination by the Secretary that such areas are essential for the conservation of the species. Section 4(b)(2) of the Act states that the Secretary must make the designation on the basis of the best scientific data available and after taking into consideration the economic impact, the impact on national security, and any other relevant impacts of specifying any particular area as critical habitat.

*Economic impacts.* In accordance with section 4(d)(2) of the Act, we prepared an economic analysis of the impacts of designating critical habitat for the pearl darter. When we published the proposed rule to designate critical habitat, we announced, and solicited public comments on, the draft economic analysis (86 FR 36678, July 13, 2021).

### **Previous Federal Actions**

Please refer to the final listing rule for the pearl darter, which published in the *Federal Register* on September 20, 2017 (82 FR 43885), for a detailed description of previous Federal actions. Subsequent to the final listing, we proposed to designate critical habitat for the pearl darter on July 13, 2021 (86 FR 36678).

### **Peer Review**

In accordance with our peer review policy published in the *Federal Register* on July 1, 1994 (59 FR 34270) and our August 22, 2016, memorandum updating and clarifying the role of peer review of actions under the Act, we solicited independent

scientific review from four knowledgeable individuals with scientific expertise that included familiarity with the pearl darter or related species, the geographic region in which the species occurs, the species' biological needs, threats to the species, and conservation biology principles. We received responses from two peer reviewers on the proposed critical habitat rule.

We reviewed all comments we received from the peer reviewers for substantive issues and new information regarding critical habitat for the pearl darter. The peer reviewers generally concurred with our methods and conclusions and provided additional information and suggestions for clarifying and improving the accuracy of the information in several sections of the preamble to the proposed rule. Peer reviewer comments are addressed below in **Summary of Changes From the Proposed Rule** and incorporated into this final rule as appropriate.

In addition, some of the peer reviewer comments also contained suggestions that were applicable to general recovery issues for the pearl darter, but not directly related to the critical habitat designation (i.e., meaning these comments are outside the scope of the critical habitat rule). These general comments included topics such as the use of reintroductions and the number of areas used as reintroduction sites. While these comments may not be directly incorporated into the critical habitat rule, we have noted the suggestions and look forward to working with our partners on these topics during recovery planning for the pearl darter.

### **Summary of Comments and Recommendations**

On July 13, 2021, we published in the *Federal Register* (86 FR 36678) a proposed rule to designate critical habitat for the pearl darter and to make available the associated draft economic analysis; the public comment period for that proposed rule was open for 60 days, ending September 13, 2021. We also contacted and invited appropriate Federal, State, and local agencies, scientific organizations, and other interested parties to comment

on the proposed critical habitat designation and draft economic analysis during the comment period. Notices of the availability of these documents for review and inviting public comment were published by The Clarion Ledger on July 17, 2021. We did not receive any requests for a public hearing.

During the comment period, we received seven public comment letters on the proposed rule; a majority of the comments supported the designation, two comments opposed the designation in two separate areas, and most comments included suggestions on how we could refine or improve the designation. All substantive information provided to us during the comment period has been incorporated directly into this final rule or is addressed below.

#### *Peer Reviewer Comments*

*(1) Comment:* Both peer reviewers provided comments questioning why Unit 2 included only the Strong River and not any of the historical range within the mainstem Pearl River, as doing so would increase redundancy within the Pearl River drainage.

*Our Response:* We recognize the importance of redundancy within the Pearl River drainage. Based on the best available science, we determined that the Strong River is the only area within the Pearl River drainage that currently meets the criteria for unoccupied critical habitat (see *Areas Unoccupied at the Time of Listing* subsection below). This does not mean that areas within the mainstem Pearl River do not contain some or all of the physical or biological features essential to the conservation of the species, but rather that we do not have information that areas in the mainstem Pearl River meet the criteria for unoccupied critical habitat. The lower Strong River also represents the stream reach within the Pearl River drainage with the best potential for recovery of the species due to current conditions, suitability for reintroductions, and access for monitoring. Further evidence of the presence of physical or biological features within this reach of the Strong River is demonstrated by recent increases in other benthic fish species

(e.g., frecklebelly madtom (*Noturus munitus*), crystal darter (*Crystallaria asprella*)) that declined concurrent with the extirpation of the pearl darter (Piller et al. 2004, pp. 1007–1011; Wagner et al. 2018, pp. 4–5).

As described in the proposed rule, this unit currently provides some of the physical or biological features essential to the conservation of the pearl darter, including a stable channel with bottom substrates of fine and coarse sand, silt, loose clay, coarse gravel, fine and coarse particulate organic matter, and woody debris; a natural hydrograph with flows to support the normal life stages of the pearl darter; and the species' prey sources. Successful conservation of the pearl darter will require the reintroduction of pearl darter within the species' historical range; the lower Strong River unoccupied unit advances this goal. Reestablishing a population in the Strong River will provide for increased redundancy within the historical range and increase the species' ecological representation. Lastly, this river reach also provides the potential for the pearl darter to expand its range into other historically occupied areas, including the mainstem Pearl River, which currently may be or may later become suitable, to ensure that the species has an adequate level of redundancy within the Pearl River drainage and guard against future catastrophic events.

#### *Comments from States*

Section 4(b)(5)(A)(ii) of the Act requires the Service to give actual notice of any designation of lands that are considered to be critical habitat to the appropriate agency of each State in which the species is believed to occur and invite each such agency to comment on the proposed designation.

(2) *Comment:* The Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP) provided a comment letter in support of the designation of critical habitat and recommended an extension of proposed Unit 1 in the Chunky River. Specifically, the MDWFP provided a publication with survey data for pearl darter in the Chunky River

(Ellwanger et al. 2021, entire) collected after the proposed rule was published, which included records of adult pearl darter upstream of the previously known records in the Chunky River. The MDWFP requested an upstream increase of the critical habitat designation within the Chunky River system of approximately 6.5 river miles (mi) (10.5 river kilometers (km)) to the uppermost Highway 80 crossing in Newton County, Mississippi (32.324 °N, 88.976 °W).

*Our response:* We incorporated this new information and minor extension of critical habitat into the rule and associated economic analysis based on the received information. At the time of listing in 2017, the pearl darter was known from 19 river mi (31 river km) within the Chunky River (82 FR 43885; September 20, 2017, p. 43888). The 2021 detection provided by MDWFP was a result of targeted sampling within suitable habitat of the Chunky River (Ellwanger et al. 2021, entire), where targeted sampling had not previously been completed. This detection resulted in an expansion of the known range of the species within the Chunky River to 28 river mi (45 river km) of occupied habitat. We consider this additional mileage of stream reach to be occupied at the time of listing because the newly discovered segment upstream has the physical or biological features essential to the conservation of the species and there are no impediments to connectivity between the new occurrence record and the areas occupied at the time of listing. Thus, the additional mileage was likely unknown to be occupied at the time of listing due to a lack of targeted surveys for the species rather than absence of the species from this segment. Although previous fish surveys had been completed in this segment, they were not targeting the pearl darter or its habitat and may not have detected the species, which is difficult to detect during surveys due to the species' small size and rarity. As such, surveys within a particular reach of an occupied stream are not always definitive of the species' absence, which lends support for considering the 6.5 river mi (10.5 river km) segment as occupied at the time of listing.

## *Public Comments*

*(3) Comment:* One public commenter noted that it is not necessary for the Service to designate the Leaf River as critical habitat for the pearl darter as the existing stream management practices are adequate to protect the habitat used by the pearl darter and, based on data collected over the last 20 years, the Leaf River is a healthy habitat for fish and macroinvertebrates. They also note that the pearl darter has increased in abundance over the past 20 or more years in the Leaf River.

*Our Response:* As directed by the Act, we proposed as critical habitat those specific areas occupied by the species at the time of listing on which are found those physical or biological features essential to the conservation of the species and which may require special management considerations or protection. Although the commenter suggested that abundance is increasing within the Leaf River and existing stream management practices are adequate to protect the habitat, the designation of critical habitat within the Leaf River is appropriate given that the segment was occupied at the time of listing and meets the definition of critical habitat as it has all of the physical or biological features essential to the conservation of the species. These features include: unobstructed and stable river channels with connected sequences of runs and bends associated with pools and scour holes, required substrates, a natural flow regime, adequate water quality conditions, and presence of a prey base.

*(4) Comment:* One commenter noted that the Service should develop a habitat suitability index, to assess the habitat impacts on the pearl darter, before designation of any critical habitat.

*Our Response:* As discussed above in our response to comment 3, we proposed as critical habitat those specific areas at the time of listing on which are found those physical or biological features essential to the conservation of the species. Further, Section 4(b)(2) of the Act states that the Secretary must make the designation based on



the best scientific data available. We have used the best available information to determine areas that contain the physical or biological features essential to the conservation of the species, which are reflected in our proposed rule and this final designation.

We appreciate the suggestion to develop a habitat suitability index for the pearl darter. Subsequent to our proposed designation of critical habitat, we developed a habitat suitability index following standard modeling approaches (Elith et al. 2006, entire; Cutler et al. 2007, entire) using the best available science to inform the recovery efforts. This analysis identified areas throughout the Pascagoula River drainage that are considered suitable habitat and are aligned with our critical habitat designation (Service 2020, unpublished data).

*(5) Comment:* One commenter offered information about forestry best management practices and the conservation benefits they provide to aquatic species on private, working forests and requested that the Service include several references supporting these benefits.

*Our Response:* We recognize that silvicultural operations are widely implemented in accordance with State-approved best management practices (BMPs; as reviewed by Cristan et al. 2018, entire). We also recognize that the adherence to these BMPs broadly protects water quality, particularly related to sedimentation (as reviewed by Cristan et al. 2016, entire; Warrington et al. 2017, entire; and Schilling et al. 2021, entire) to an extent that these operations do not impair the species' conservation. We have included some of these references here in our response. In addition, in our proposed rule, we included the use of BMPs for forestry activities as an example of special management actions that would minimize or ameliorate threats to water quality.

*(6) Comment:* One commenter stated the designation of critical habitat in Unit 2 is not based on the best scientific data available, particularly that the water quality in Unit 2

does not meet the current State of Mississippi criteria, and that there is not scientific support for the statement that there is a high potential for successful reintroduction into the Pearl River drainage.

*Our Response:* We have identified that some of the physical or biological features essential to the conservation of the species can be found within Unit 2 in the Pearl River drainage (see *Summary of Essential Physical or Biological Features*, below). We have revised our description of the physical or biological features present in Unit 2 to reflect that the water quality physical or biological feature currently is not met during all portions of the year. However, Unit 2 in the Strong River provides some of the physical or biological features essential to the conservation of the pearl darter, including a stable channel with bottom substrates of sand, silt, loose clay and gravel, bedrock, fine and coarse particles of organic matter, woody debris, and a natural hydrograph with flows to support the normal life stages of the pearl darter and the species' prey sources. In addition, channel integrity is controlled and protected by natural bedrock outcrops, and improvement in water quality is indicated by the resurgence of other benthic fish species (e.g., frecklebelly madtom and crystal darter) that historically co-occurred with the pearl darter and experienced declines when the pearl darter disappeared from the drainage (Piller et al. 2004, pp. 1007–1011; Tipton et al. 2004, pp. 57–60; Wagner et al. 2018, entire). We also acknowledge observations from a biologist that has worked in the Strong River since the 1970s (Hartfield 2021, pers. comm.) and a local landowner (Gillespie 2021, pers. comm.). Both have noted improvements in water quality due to a reduction in pollutants from chicken farming and other sources since the 1970s, presumably due to enactment and enforcement of the Clean Water Act of 1972, which has greatly improved water quality monitoring.

The assessment that this species has high potential for successful reintroduction is based on the fact that the species has been successfully propagated in captivity (Campbell

and Schwarz 2019, entire) and suitable habitats are still found at the type locality on the Strong River (Wagner 2022, pers. comm.). Suttkus et al. (1994, p. 19) note habitat for the pearl darter in the Strong River, which is consistent with habitat descriptions from recent surveys in the Pascagoula (Slack et al. 2005, pp. 9–11; Clark et al. 2018, pp. 104–105) and observations of the habitat currently found at the type locality within the Strong River (Wagner 2022, pers. comm.).

Moreover, recent and ongoing studies have filled many of the previously identified knowledge gaps for the species that will inform successful reintroduction planning. Habitat associations have been studied (Clark et al. 2018, p. 103). Completed genetic work is being used to inform propagation and serve as a reference for reintroduction (Schaefer et al. 2020, entire). We are currently working with the University of Southern Mississippi to study the life history of the species through an ongoing project. Data collected through this project have been used to help inform the Service on the timing of spawning for the species, which will help to better monitor existing populations and any newly introduced populations. Additionally, a preliminary study of the diet of pearl darter has found the species not to be a specialist as it was noted to consume larval mayflies, caddisflies, black flies, and ostracods (Service 2022, unpublished data). We recognize that additional studies and information will help improve the reintroduction planning for the species although recent and ongoing studies have addressed many of the knowledge gaps that previously existed.

*(7) Comment:* One commenter notes that the economic analysis fails to consider costs to projects related to mitigation measures, water quality issues, project modifications, and project relocations.

*Our Response:* Section 4(b)(2) of the Act and its implementing regulations require that we consider the economic impact that may result from a designation of critical habitat. In our incremental effects memorandum (IEM), we clarified the

distinction between the recommendations that will result from the species being listed and those attributable to the critical habitat designation (i.e., difference between the jeopardy and adverse modification standards) for the pearl darter's critical habitat. As discussed in section 3 of the screening analysis (Industrial Economics, Incorporated (IEc) 2020, pp. 9–19), the Service does not anticipate making any additional project modification recommendations to avoid adverse modification of pearl darter critical habitat beyond what we already recommend to avoid impacts to other listed species with similar habitat requirements, including the Gulf sturgeon (listed as Atlantic sturgeon (Gulf subspecies); *Acipenser oxyrinchus desotoi*), ringed map turtle (*Graptemys oculifera*), and yellow blotched map turtle (*Graptemys flavimaculata*). This statement is true for both Unit 1, which is occupied such that the species already would be considered for consultation since it is listed, and Unit 2, which is unoccupied. The screening analysis also highlights the project recommendations contained in the Standard Local Operations Procedures for Endangered Species (SLOPES) agreement for Mississippi between the Service and the U.S. Army Corps of Engineers. In making this determination in our economic analysis, the Service considered the potential for recommendations that include mitigation measures, are specific to water quality issues, or may result in project relocations.

(8) *Comment:* One commenter asserts that the economic analysis should consider the potential for losses in value among properties adjacent to the proposed river miles.

*Our Response:* Existing economics literature suggests that critical habitat may affect property values (List et al. 2006, entire; Auffhammer et al. 2020, entire). This literature references particular species and geographic contexts, and the transferability of the results to other species and regions is uncertain. As described in section 4 of the screening analysis (IEc 2020, pp. 19–20), this literature has not evaluated the effects of riverine critical habitat on adjacent property values. While perceptual effects on land

values are possible, the likelihood and magnitude of such effects for this rule are uncertain. Although the screening analysis acknowledges this uncertainty, it does not conclude that these effects are likely, and we did not consider potential impacts to property values given the lack of support in the available literature (IEc 2020, p. 20). Lastly, the commenter did not provide information or literature on potential loss in property value that would lead us to change our evaluation in the screening analysis.

*(9) Comment:* One commenter suggests that the economic analysis should consider the costs associated with unrealized future development and lost tax revenues associated with activities in Unit 2.

*Our Response:* As described in response to comment 7 above and in section 3 of the screening analysis (IEc 2020, pp. 9–19), the Service does not anticipate making project modification recommendations to avoid adverse modification of pearl darter critical habitat beyond what has already been recommended to avoid impacts to other listed species with similar habitat requirements, including the Gulf sturgeon and ringed map turtle. The costs associated with changes in development activity would be incurred regardless of whether critical habitat for the pearl darter is designated along the Strong River because of the presence of other listed species. Therefore, the critical habitat designation for the pearl darter is unlikely to affect future development or tax revenues in the region.

*(10) Comment:* One commenter noted that the Service incorrectly states in the discussion of administrative costs of section 7 consultations in the draft economic analysis that the critical habitat designation will not result in any additional consultations on the Strong River.

*Our Response:* As Unit 2 overlaps with the listed range of the Gulf sturgeon and ringed map turtle, all activities with a Federal nexus that may affect pearl darter critical habitat would in fact require consultation even absent the critical habitat designation for

the pearl darter in order to consider potential effects on the Gulf sturgeon and ringed map turtle. It is also important to note that activities potentially affecting critical habitat can occur outside of the area designated as critical habitat. Activities occurring upstream of the area designated as critical habitat for the Gulf sturgeon, which would include Unit 2, that could negatively impact water quality and then Gulf sturgeon critical habitat would require consultation under section 7(a)(2) of the Act where there is a Federal nexus. For example, in 2019, the Service consulted on a bridge replacement project situated along the Strong River in Simpson County and specifically considered the Gulf sturgeon critical habitat as well as the ringed map turtle. Similarly, in 2006, the Service considered both the Gulf sturgeon critical habitat and ringed map turtle during a consultation regarding a new pipeline crossing within the Strong River drainage. The proposed Unit 2, therefore, does benefit from the baseline protections afforded to other species with similar habitat needs given the connectivity of the Strong River with existing critical habitats on the Pearl River.

### **Summary of Changes From the Proposed Rule**

After consideration of the comments we received during the public comment period (refer to **Summary of Comments and Recommendations**, above) and new information published or obtained since the proposed rule was published, we made changes to the final critical habitat rule. Many small, non-substantive changes and corrections that do not affect the determination (e.g., updating the **Background** section of the preamble in response to comments, minor clarifications) were made throughout the document. Below is a summary of changes made to the final rule.

#### *Economic Analysis*

(1) The draft economic analysis incorrectly displayed that the unoccupied habitat in proposed Unit 2 overlaps with the designated critical habitat for other species. Specifically, in Exhibit 1, Summary of Proposed Critical Habitat Units for the Pearl

Darter, of the screening memo (IEc 2020, p. 6), incorrect information was displayed in the column Overlaps With Existing Critical Habitat For Other Aquatic or Riparian Listed Species under Unit 2. The “Yes” should have been a “No” as the proposed critical habitat does not overlap with critical habitat for other species. This error was corrected and is addressed in the updated memorandum from IEc (IEc 2021, p. 1).

(2) Updated the economic analysis to include consideration of the additional 6.5 river mi (10.5 river km) within Unit 1. Despite the increase in size of Unit 1, the total incremental costs are not expected to change relative to the screening analysis (IEc 2020, entire; IEc 2021, entire).

#### *Preambles to the Rulemaking Documents*

The following items describe changes made between statements in the preamble of the proposed rule and those in the preamble of this final rule.

(3) In *Criteria Used To Identify Critical Habitat*, based on feedback from a peer reviewer, we removed a statement that indicated the pearl darter’s representation would increase from current levels by allowing for local environmental adaptation and increasing genetic representation. The Service had not provided adequate information to support that statement, and the species currently has low levels of genetic diversity within its occupied range.

(4) In *Application of the “Adverse Modification” Standard*, we included a statement that, during a consultation under section 7(a)(2) of the Act, the Services may find that activities likely to destroy or adversely modify critical habitat include activities that occur within critical habitat or affect the critical habitat.

(5) In *Habitats Representative of the Historical, Geographical, and Ecological Distributions of the Species*, we:

(a) Changed a statement that the pearl darter is definitively extirpated to it being considered extirpated within the Pearl River basin, based on information from peer

reviewers. Given the species' cryptic nature, lack of targeted surveys within the Pearl River basin, and the fact that extirpation is a high bar to definitively prove, researchers do not consider the pearl darter to be definitively extirpated from this system despite a lack of detections over the past several decades.

(b) Added information from a habitat suitability model that was developed for recovery efforts (Service 2021, unpublished data), which confirmed that our proposed designation of critical habitat contains areas indicated as suitable for the species.

(c) Incorporated additional citations—provided through the public comment and peer review process—to support our discussion of physical and biological features, species needs, and species occurrence.

(d) Updated the calculation of the proportion of habitat lost from “roughly half” to 36 percent. The updated total better accounts for the proportion of occupied habitat lost with the extirpation of the species within the Pearl River basin.

(6) In *Space for Individual and Population Growth and for Normal Behavior*, we removed the description of the habitat for the prey of pearl darter and described only habitat as found in recent literature (Slack et al. 2005, pp. 9, 11).

(7) In *Food, Water, Air, Light, Minerals, or Other Nutritional or Physiological Requirements* section and *Summary of Essential Physical or Biological Features*, we incorporated information from a recent preliminary diet study (Service, unpublished data) of specimens from the Chunky River and Chickasawhay River. This study confirmed that the pearl darter is a dietary generalist.

(8) In *Sites for Breeding, Reproduction, or Rearing (or Development) of Offspring*, we incorporated information that indicates that spawning has not been observed in the wild, but rather individuals in spawning condition have been collected.



(9) In *Areas Occupied at the Time of Listing*, we have incorporated information from two additional citations (Clark et al. 2018, entire; Ellwanger et al. 2021, entire) that add known distribution information for the species.

(10) In **Final Critical Habitat Designation**, we have revised our description of the physical or biological features present in Unit 2 to reflect our recognition that the physical or biological feature pertaining to water quality is not currently met during all portions of the year.

#### *Rule Text*

(11) In the rule portion of this document we have made the following changes:

(a) In the list of the physical or biological features required for the pearl darter, we adjusted the descriptions of the bottom substrates and prey base, based on information received during the comment period; and,

(b) In the designation of critical habitat for Unit 1, we expanded the designation in the Chunky River based on information submitted by the Mississippi Department of Wildlife, Fisheries, and Parks as described above in the response to comment 2.

## **I. Critical Habitat**

### **Background**

Critical habitat is defined in section 3 of the Act as:

(1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features

(a) Essential to the conservation of the species, and

(b) Which may require special management considerations or protection; and

(2) Specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Our regulations at 50 CFR 424.02 define the geographical area occupied by the species as an area that may generally be delineated around species' occurrences, as determined by the Secretary (i.e., range). Such areas may include those areas used throughout all or part of the species' life cycle, even if not used on a regular basis (e.g., migratory corridors, seasonal habitats, and habitats used periodically, but not solely by vagrant individuals).

This critical habitat designation was proposed when the regulations defining "habitat" (85 FR 81411; December 16, 2020) and governing the 4(b)(2) exclusion process for the Service (85 FR 82376; December 18, 2020) were in place and in effect. However, those two regulations have been rescinded (87 FR 37757; June 24, 2022, and 87 FR 43433; July 21, 2022) and no longer apply to any designations of critical habitat. Therefore, for this final rule designating critical habitat for the pearl darter, we apply the regulations at 50 CFR 424.19 and the 2016 Joint Policy on 4(b)(2) exclusions (81 FR 7226; February 11, 2016).

Conservation, as defined under section 3 of the Act, means to use and the use of all methods and procedures that are necessary to bring an endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking.

Critical habitat receives protection under section 7 of the Act through the requirement that Federal agencies ensure, in consultation with the Service, that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of critical habitat. The designation of critical habitat does not affect land

ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation does not allow the government or public to access private lands. Such designation does not require implementation of restoration, recovery, or enhancement measures by non-Federal landowners. Where a landowner requests Federal agency funding or authorization for an action that may affect a listed species or critical habitat, the Federal agency would be required to consult with the Service under section 7(a)(2) of the Act. However, even if the Service were to conclude that the proposed activity would likely result in destruction or adverse modification of the critical habitat, the Federal action agency and the landowner are not required to abandon the proposed activity, or to restore or recover the species; instead, they must implement “reasonable and prudent alternatives” to avoid destruction or adverse modification of critical habitat.

Under the first prong of the Act’s definition of critical habitat, areas within the geographical area occupied by the species at the time it was listed are included in a critical habitat designation if they contain physical or biological features (1) which are essential to the conservation of the species and (2) which may require special management considerations or protection. For these areas, critical habitat designations identify, to the extent known using the best scientific and commercial data available, those physical or biological features that are essential to the conservation of the species (such as space, food, cover, and protected habitat).

Under the second prong of the Act’s definition of critical habitat, we can designate critical habitat in areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific data available. Further, our Policy on Information Standards Under the Endangered Species Act (published in the *Federal Register* on July 1, 1994 (59 FR

34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106-554; H.R. 5658)), and our associated Information Quality Guidelines provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. They require our biologists, to the extent consistent with the Act and with the use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat.

When we are determining which areas should be designated as critical habitat, our primary source of information is generally the information developed during the listing process for the species. Additional information sources may include any generalized conservation strategy, criteria, or outline that may have been developed for the species; the recovery plan for the species; articles in peer-reviewed journals; conservation plans developed by States and counties; scientific status surveys and studies; biological assessments; other unpublished materials; or experts' opinions or personal knowledge.

Habitat is dynamic, and species may move from one area to another over time. We recognize that critical habitat designated at a particular point in time may not include all of the habitat areas that we may later determine are necessary for the recovery of the species. For these reasons, a critical habitat designation does not signal that habitat outside the designated area is unimportant or may not be needed for recovery of the species. Areas that are important to the conservation of the species, both inside and outside the critical habitat designation, will continue to be subject to: (1) Conservation actions implemented under section 7(a)(1) of the Act; (2) regulatory protections afforded by the requirement in section 7(a)(2) of the Act for Federal agencies to ensure their actions are not likely to jeopardize the continued existence of any endangered or threatened species; and (3) the prohibitions found in section 9 of the Act. Federally funded or permitted projects affecting listed species outside their designated critical

habitat areas may still result in jeopardy findings in some cases. These protections and conservation tools will continue to contribute to recovery of the species. Similarly, critical habitat designations made on the basis of the best available information at the time of designation will not control the direction and substance of future recovery plans, habitat conservation plans (HCPs), or other species conservation planning efforts if new information available at the time of those planning efforts calls for a different outcome.

### **Prudence and Determinability**

Section 4(a)(3) of the Act, as amended, and implementing regulations (50 CFR 424.12) require that, to the maximum extent prudent and determinable, the Secretary shall designate critical habitat at the time the species is determined to be an endangered or threatened species. In our proposed critical habitat rule (86 FR 36678; July 13, 2021), we found that designating critical habitat is both prudent and determinable for the pearl darter. In this final rule, we reaffirm those determinations.

### **Physical or Biological Features Essential to the Conservation of the Species**

In accordance with section 3(5)(A)(i) of the Act and regulations at 50 CFR 424.12(b), in determining which areas we will designate as critical habitat from within the geographical area occupied by the species at the time of listing, we consider the physical or biological features that are essential to the conservation of the species and which may require special management considerations or protection. The regulations at 50 CFR 424.02 define “physical or biological features essential to the conservation of the species” as the features that occur in specific areas and that are essential to support the life-history needs of the species, including, but not limited to, water characteristics, soil type, geological features, sites, prey, vegetation, symbiotic species, or other features. A feature may be a single habitat characteristic or a more complex combination of habitat characteristics. Features may include habitat characteristics that support ephemeral or dynamic habitat conditions. Features may also be expressed in terms relating to principles

of conservation biology, such as patch size, distribution distances, and connectivity. For example, physical features essential to the conservation of the species might include gravel of a particular size required for spawning, alkaline soil for seed germination, protective cover for migration, or susceptibility to flooding or fire that maintains necessary early-successional habitat characteristics. Biological features might include prey species, forage grasses, specific kinds or ages of trees for roosting or nesting, symbiotic fungi, or absence of a particular level of nonnative species consistent with conservation needs of the listed species. The features may also be combinations of habitat characteristics and may encompass the relationship between characteristics or the necessary amount of a characteristic essential to support the life history of the species.

In considering whether features are essential to the conservation of the species, we may consider an appropriate quality, quantity, and spatial and temporal arrangement of habitat characteristics in the context of the life-history needs, condition, and status of the species. These characteristics include, but are not limited to, space for individual and population growth and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, or rearing (or development) of offspring; and habitats that are protected from disturbance.

*Habitats Representative of the Historical, Geographical, and Ecological Distributions of the Species*

The pearl darter is historically known from rivers and streams within the Pearl River and Pascagoula River drainages in Mississippi and Louisiana, and the species was described from the lower Strong River within the Pearl River drainage of Mississippi (Suttkus et al. 1994, pp. 15–20). The darter has been considered extirpated from the Pearl River drainage for several decades apparently due to system-wide channel and water quality degradation occurring in the late 1960s to early 1970s (Kuhajda 2009, pp. 17–18;

Wagner et al. 2017, entire). With this presumed extirpation, 36 percent of the historical, geographical, and ecological habitats of the pearl darter are no longer occupied. Channel integrity and water quality within the Pearl River drainage have since improved due to the enactment of State and Federal laws and regulations addressing water pollution and in-channel sand and gravel mining. In the lower Strong River, channel integrity is controlled and protected by natural bedrock outcrops, and water quality has improved as indicated by the resurgence of other benthic fish species that historically co-occurred with the pearl darter (Piller et al. 2004, pp. 1007–1011; Tipton et al. 2004, pp. 57–60; Wagner et al. 2018, entire).

Within the Pascagoula River drainage, the pearl darter is known to occur within the Pascagoula, Chickasawhay, Leaf, Chunky, and Bouie Rivers and the Okatoma and Black Creeks (Suttkus et al. 1994, pp. 15–20; Wagner et al. 2017, pp. 3–10, 12; Clark et al. 2018, pp. 100–103; Schaefer et al. 2020, pp. 26–27, 43–44). This area was reaffirmed as suitable habitat throughout a contiguous distribution based on a habitat suitability model developed for the species (Service 2021, unpublished data).

The lower Strong River within the Pearl River drainage and the rivers and streams identified above within the Pascagoula River drainage are representative of the historical, geographical, and ecological distribution of the species.

#### *Space for Individual and Population Growth and for Normal Behavior*

The pearl darter is found in free-flowing, low-gradient streams and rivers with pools and scour holes associated with channel bends and runs (Slack et al. 2002, p. 10; Bart et al. 2001, p. 13). Presence of the darter is associated with bottom substrates including fine and coarse sand, silt, loose clay, coarse gravel, fine and coarse particulate organic matter, and woody debris (Slack et al. 2005, pp. 9, 11). Pearl darter occurrence within these habitats may be seasonal with spawning occurring in upstream reaches and growth and recruitment in downstream reaches (Bart et al. 2001, pp. 13, 15). Therefore, a

continuum of perennial, uninterrupted, and interconnected natural small stream-to-river channel habitat is required for downstream drift of larvae or movement of juveniles and upstream migration of spawning adults.

*Food, Water, Air, Light, Minerals, or Other Nutritional or Physiological Requirements*

The pearl darter requires unimpeded and interconnected stretches of perennial and flowing streams and rivers with adequate water quality. Water temperatures at pearl darter collection sites have ranged from 8 to 30 degrees Celsius (°C) (46.4 to 86.0 degrees Fahrenheit (°F)) (Suttkus et al. 1994, pp. 17–19; Bart et al. 2001, p. 13, Slack et al. 2002, p. 10), with dissolved oxygen of 5.8 to 9.3 milligrams per liter (mg/l) (Suttkus et al. 1994, pp. 17–19; Bart et al. 2001, pp. 7, 13–14; Slack et al. 2002, p. 10). The species is apparently sensitive to warmer water temperatures and may seasonally require tributaries with canopy shading and/or cool spring flows as seasonal refugia from warmer, unshaded river channels (Bart et al. 2001, p. 14).

Preliminary analysis of diets of specimens from the Chunky River and Chickasawhay River show the species feeds on larval mayflies, larval caddisflies, larval black flies, ostracods (crustaceans), chironomids (midges), and gastropods (snails). Food availability is likely affected by adequate flow, channel stability, water quality, and local habitat conditions, which may vary throughout or between the rivers and streams occupied or historically occupied by the species. Pearl darter have been maintained in captivity for at least 2 years on a diet of bloodworms (Campbell and Schwarz 2019, entire).

*Sites for Breeding, Reproduction, or Rearing (or Development) of Offspring*

Pearl darter have been collected at sites with cool to warm water temperatures (8 to 30 °C (46.4 to 86.0 °F)), high dissolved oxygen (5.8 to 9.3 mg/l), slightly acidic to basic pH values (6.3 to 7.6), and low levels of pollution (Suttkus et al. 1994, pp. 17–19; Bart et al. 2001, pp. 7, 13–14; Slack et al. 2002, p. 10). Spawning has not been observed



in the wild for pearl darter. However, adult pearl darter have been collected in spawning condition in the Strong River where they were associated with bedrock and broken rubble (Suttkus et al. 1994, p. 19) and in three probable spawning sites in the Pascagoula River system that were characterized by extensive outcrops of limestone or sandstone (Bart and Piller 1997, p. 8). Pearl darter in spawning condition in the Pascagoula River drainage have also been collected over firm gravel in relatively shallow, flowing water from April to early May (Bart et al. 2001, p. 13). Ideal conditions for spawning have been described as channel reaches with good canopy shading, an extensive buffer of mature forest, and good water quality (Bart et al. 2001, p. 15).

Adults collected in spawning condition in the Pearl and Strong Rivers (Mississippi) were documented during March through May (Suttkus et al. 1994, pp. 19–20), and young of year were collected in June (Suttkus et al. 1994, p. 19). Based on collection occurrence patterns, some researchers have postulated that adult pearl darter migrate upstream during the fall and winter to spawn in suitable upstream gravel reaches with elevated river discharge during the spring dispersing the larvae and juveniles into downstream reaches (Bart et al. 2001, p. 14; Ross et al. 2000, p. 11). Other studies have hypothesized that the species disperses locally from shallow spawning habitats into nearby deeper habitats where their presence is more difficult to detect (Slack et al. 2002, p. 18). The pattern of the disappearance of the pearl darter from all stream orders in the Pearl River drainage over a relatively short period of time suggests that some degree of seasonal interchange between tributary and river channel subpopulations may have been a factor in the species' presumed extirpation from that drainage. Therefore, until more is known relative to seasonal dispersal, connectivity between instream habitats should be considered essential for successful breeding and rearing of the pearl darter.

#### *Summary of Essential Physical or Biological Features*

We derive the specific physical or biological features essential to the conservation of pearl darter from studies of the species' habitat, ecology, and life history as described below. Additional information can be found in the proposed critical habitat (86 FR 36678; July 13, 2021) and final listing rule (82 FR 43885; September 20, 2017) for the pearl darter. We have determined that the following physical or biological features are essential to the conservation of the pearl darter:

(1) Unobstructed and stable stream and river channels with:

(a) Connected sequences of channel runs and bends associated with pools and scour holes; and

(b) Bottom substrates consisting of fine and coarse sand, silt, loose clay, coarse gravel, fine and coarse particulate organic matter, or woody debris.

(2) A natural flow regime necessary to maintain instream habitats and their connectivity.

(3) Water quality conditions, including cool to warm water temperatures (8 to 30 °C (46.4 to 86.0 °F)), high dissolved oxygen (5.8 to 9.3 mg/l), slightly acidic to basic pH (6.3 to 7.6), and low levels of pollutants and nutrients meeting the current State of Mississippi criteria as necessary to maintain natural physiological processes for normal behavior, growth, and viability of all life stages of the species.

(4) Presence of a prey base of small aquatic macroinvertebrates, including larval mayflies, larval caddisflies, larval black flies, ostracods (crustaceans), chironomids (midges), and gastropods (snails).

### **Special Management Considerations or Protection**

When designating critical habitat, we assess whether the specific areas within the geographical area occupied by the species at the time of listing contain features which are essential to the conservation of the species and which may require special management considerations or protection. The pearl darter faces threats from water quality degradation

from point and non-point source pollution, discharges from municipalities, and geomorphological changes to its channel habitats (82 FR 43885, September 20, 2017, pp. 43888–43893). The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: (1) Actions that alter the minimum or existing flow regime, including impoundment, channelization, or water diversion; (2) actions that significantly alter water chemistry or temperature by the release of chemicals, biological pollutants, or heated effluents into the surface water or connected groundwater at a point or non-point source; and (3) actions that significantly alter channel morphology or geometry, including channelization, impoundment, road and bridge construction, or instream mining.

Examples of special management actions that would minimize or ameliorate threats to the pearl darter include: (a) Restoration and protection of riparian corridors; (b) implementation of best management practices to minimize erosion (such as State and industry best management practices for road construction, forest management, or mining activities); (c) stream bank restoration projects; (d) private landowner programs to promote watershed and soil conservation (such as the U.S. Department of Agriculture's Farm Bill and the Service's Private Lands programs); (e) implementation of best management practices for storm water; and (f) upgrades to industrial and municipal treatment facilities to improve water quality in effluents.

### **Criteria Used To Identify Critical Habitat**

As required by section 4(b)(2) of the Act, we use the best scientific data available to designate critical habitat. In accordance with the Act and our implementing regulations at 50 CFR 424.12(b), we review available information pertaining to the habitat requirements of the species and identify specific areas within the geographical area occupied by the species at the time of listing and any specific areas outside the geographical area occupied by the species to be considered for designation as critical

habitat. We are designating critical habitat in areas within the geographical area occupied by the species at the time of listing. We also are designating specific areas outside the geographical area occupied by the species because we have determined that a designation limited to occupied areas would be inadequate—and therefore designation of unoccupied area is essential—to ensure the conservation of the species.

The current distribution of the pearl darter is reduced from its historical distribution, and we anticipate that recovery will require continued protection of the existing population and habitat, as well as establishing a population within its historical range (i.e., unoccupied critical habitat), to ensure there are adequate numbers of pearl darter occurring in stable populations for the species' continued conservation.

Furthermore, rangewide recovery considerations, such as maintaining existing genetic diversity and striving for representation of all major portions of the species' historical range, were considered in formulating the proposed critical habitat designation.

We are designating critical habitat in areas within the geographical area occupied by the species at the time of listing. We identified areas with current occurrence records that we deemed suitable habitat (see delineation steps, below) and that had one or more of the physical or biological features identified for the pearl darter that may require special management considerations or protection. We also are designating specific areas outside of the geographical area occupied by the species at the time of listing because we have determined that those areas are essential for the conservation of the species. For those unoccupied areas, we have determined that it is reasonably certain that the unoccupied areas will contribute to the conservation of the species and contain one or more of the physical or biological features that are essential to the conservation of the species.

Threats to pearl darter occurring in the Pascagoula River drainage are compounded by the species' naturally low numbers and short life span, but the species' conservation potential is primarily limited by its extirpation from the Pearl River drainage

and, therefore, its lack of redundancy. The documented Pearl River drainage extirpation was rapid and system-wide, including all mainstem and tributary collection sites seemingly simultaneously. As such, we consider pearl darter occurring within the Pascagoula River and its tributaries as a single population. The loss of the species' redundancy with its extirpation from the Pearl River drainage has also diminished its genetic and ecological representation and, therefore, increased the species' vulnerability to catastrophic events and population changes. A successful reintroduction into the Pearl River drainage would restore the species' redundancy within its historical range. Thus, reintroducing the species into the Pearl River drainage would contribute to the resilience and conservation of the pearl darter.

Factors implicated in the Pearl River extirpation include geomorphic instability (i.e., channel erosion and degradation), sedimentation, and point source pollution from municipalities and industries (e.g., Bart and Suttkus 1995, p. 14; Tipton et al. 2004, pp. 59–60). One or all of these factors may have been responsible for the diminishment or loss of some or all of the physical or biological features essential to the conservation of the pearl darter within the drainage (e.g., channel stability, substrate, water quality, prey base). We now find that these factors have been reduced to a degree that the pearl darter may be successfully reintroduced into the Pearl River.

For example, active channel erosion and degradation that may have been precipitated by the 1956 construction of the Pearl River navigation system in the lower basin and aggravated by the 1963 construction of the Ross Barnett Reservoir in the upper basin have diminished. Moreover, instream mining is now prohibited by the States of Mississippi and Louisiana, thus resulting in more stable channel habitats within the basin. In addition, point-source pollution from untreated municipal and industrial discharge into the Pearl River has been significantly reduced by enactment and enforcement of the Clean Water Act of 1972 (33 U.S.C. 1251 et seq.). The improvement of the physical or

biological features within the Pearl River drainage is also demonstrated by recent observed increases in other benthic fish species (e.g., crystal darter, frecklebelly madtom), which experienced declines concurrent with the extirpation of the pearl darter (Piller et al. 2004, pp. 1007–1011; Tipton et al. 2004, pp. 57–60; Wagner et al. 2018, p. 13). These improvements indicate that one or more of the physical or biological features essential to the conservation of the pearl darter are now present within the Pearl River drainage. Because the Pearl River drainage habitat contains the physical or biological features for the pearl darter and supports other benthic fish species with similar life processes, we conclude that the drainage contains the resources and conditions necessary to support the life processes for the pearl darter and is essential for the conservation of the species.

We completed the following steps to delineate critical habitat:

(1) Compiled all available current and historical occurrence data records for the pearl darter in both the Pascagoula and Pearl River drainages.

(2) Used confirmed presence from 1994–2021 as the foundation for identifying areas currently occupied in the Pascagoula River drainage.

(3) Evaluated habitat suitability of stream segments that contain the identified physical or biological features and that are currently occupied by the species and retained all occupied stream segments.

(4) Evaluated unoccupied segments of the Pearl River drainage for suitability of spawning and recruitment, darter reintroduction, and monitoring and management of a reintroduced population.

(5) Evaluated unoccupied segments of the Pearl River drainage for connectivity with reaches that were historically occupied and identified areas containing the physical or biological features essential to the conservation of the species that may require special management considerations or protection.

Sources of data for this critical habitat designation include the proposed and final listing rules (81 FR 64857, September 21, 2016; 82 FR 43885, September 20, 2017), fish collection databases provided by the MDWFP, survey reports and observations, and peer-reviewed publications.

#### *Areas Occupied at the Time of Listing*

We used reports and collection data to map species site collections and occurrences between 1994 and 2021, to determine areas occupied at the time of listing. Based on the best available scientific data, we determined that all currently known occupied habitat for the pearl darter was also occupied by the species at the time of listing and that these areas contain all of the physical or biological features essential to the conservation of the species although they may require special management considerations or protection.

As stated above, we delineated units based on documented occurrences and the existing physical or biological features essential to the conservation of the species. Collection occurrence patterns suggest that adult pearl darter migrate upstream to spawn in suitable gravel or bedrock reaches with elevated spring river discharge dispersing larvae and juveniles into downstream reaches; an alternative hypothesis considers that the pearl darter moves from shallow, easily collected spawning habitats into deeper habitats where it is more difficult to detect the fish (see *Sites for Breeding, Reproduction, or Rearing (or Development) of Offspring*, above). While both hypotheses are partially supported by data, we note that the disappearance of the species from the Pearl River drainage occurred fairly rapidly and simultaneously in all stream orders, suggesting some element of migration may be involved in the darter's life history. To allow for potential seasonal movement between stream reaches, we are designating one continuous unit of occupied critical habitat within the Pascagoula River drainage. This unit includes portions of the Chunky, Bouie, Leaf, Chickasawhay, and Pascagoula Rivers as well as reaches of

Okatoma and Big Black Creeks as described below under **Final Critical Habitat**

**Designation.**

Clark et al. (2018, entire) provides a thorough review of the distribution of the species from 1950 through 2016, throughout both the Pearl River and Pascagoula River drainages prior to the listing of the species in 2017. Since the 2017 listing of the species, there have been 86 site collections of pearl darter in the Pascagoula River drainage (Wagner et al. 2019, pp. 8–18; Schaefer et al. 2020, pp. 26–27, 43–44; Ellwanger et al. 2021, p. 5). One of these collections in 2018 extended the known range approximately 60 mi (97 km) in Black Creek, above its confluence with the occupied reach of Big Black Creek (Schaefer et al. 2020, pp. 26–27). An additional collection in 2021 extended the known historical range approximately 4.0 river mi (6.4 river km) upstream in the Chunky River, which is upstream of the second-most upstream State Highway 80 and Chunky River crossing (Ellwanger et al. 2021, p. 10). We consider this additional mileage of stream reach to be occupied at the time of listing because the reaches between the previously identified populations in Big Black Creek or Chunky River and the newly discovered populations upstream both have the physical or biological features essential to the conservation of the species and its potential seasonal migration. Further, there are no impediments to connectivity between the new occurrence records and the areas that were known to be occupied when the species was listed in 2017. The potential for seasonal migration, the species' small size and rarity, and the fact that surveys for the pearl darter are difficult and not always definitive of the species' absence within a particular reach of an occupied stream also support considering this area occupied at the time of listing.

In making these determinations, we recognize that collection sites for the pearl darter occur at areas generally accessible to fish biologists and that occupied habitats within a river reach may vary depending upon life stage, stream size, and season. Additionally, stream habitats are highly dependent upon upstream and downstream



channel habitat conditions for their maintenance. Therefore, we considered the areas occupied at the time of listing to extend from an identifiable landmark (e.g., bridge crossing, tributary confluence, etc.) nearest the uppermost records within second or third order streams through their confluence with third and fourth order streams downstream to an identifiable landmark near the lowermost areas of collection in the Pascagoula River (i.e., forks of the East and West Pascagoula River). Within the current range of the pearl darter within the Pascagoula River drainage, some habitats may or may not be actively used at all times by individuals; however, these areas are necessary for maintaining population connectivity as well as other physical or biological features essential to the conservation of the species and, therefore, are considered the geographic area occupied at the time of listing for the pearl darter. This area (referred to below as *Unit 1: Pascagoula River Unit*) contains all of the physical or biological features essential to the conservation of the pearl darter but may require special management conditions or protections.

#### *Areas Unoccupied at the Time of Listing*

To consider areas not occupied by the species at the time of listing for designation, we must demonstrate that these areas are essential for the conservation of the pearl darter. The occupied critical habitat designation does not include geographic areas within the Pearl River drainage—the only other area in which the pearl darter historically occurred—as it is considered extirpated in that drainage. In addition, because the Pascagoula River drainage population is the only extant population, that population provides no redundancy for the species. Based upon the species' rapid and system-wide extirpation from the Pearl River drainage, a series of back-to-back stochastic events or a single catastrophic event could similarly significantly reduce resiliency or extirpate the Pascagoula River population. For these reasons, we determined that we cannot conserve the species by designating only occupied habitat as it includes only a single population in a single drainage. Thus, we determined that habitat in another historical drainage is

needed for the long-term survival and recovery of the species. Therefore, because we determined that the one occupied area alone is not adequate for the conservation of the species, we have identified and are designating as critical habitat specific areas outside the geographical area occupied by the species at the time of listing that are essential for the conservation of the species. We used historical occurrence data and the physical or biological features described earlier to identify unoccupied habitat essential for the conservation of the pearl darter.

Based on our review, we determined that the lower Strong River, a major tributary of the Pearl River, has the potential for future reintroduction and reoccupation by the pearl darter provided that stressors are managed and mitigated. Reestablishing a population in the Strong River will restore the species' redundancy within the historical range and increase the species' ecological representation. The specific area of the lower Strong River encompasses the minimum area of the species' historical range within the Pearl River drainage while still providing ecological diversity so that the species can evolve and adapt over time. This river reach also provides the potential for the pearl darter to expand its range into other historically occupied areas that currently may be or may later become suitable to ensure that the species has an adequate level of redundancy within the Pearl River drainage and guard against future catastrophic events. The lower Strong River also represents the stream reach within the historical range with the best potential for reestablishment of a population in the Pearl River due to current conditions, suitability for reintroductions, and access for monitoring.

Accordingly, we are designating one unoccupied unit in the lower Strong River within the Pearl River drainage. As described below in the individual unit descriptions (see description for *Unit 2: Strong River Unit* below), this unit contains some of the physical or biological features essential to the conservation of the species and is reasonably certain to contribute to the conservation of the species.

### *General Information on the Maps of the Critical Habitat Designation*

The areas designated as critical habitat include only stream channels within the ordinary high-water line. There are no developed areas within the critical habitat boundaries except for transportation and pipeline crossings, which do not remove the suitability of these areas for the pearl darter. When determining critical habitat boundaries, we made every effort to avoid including developed areas such as lands covered by buildings, pavement, and other structures because such lands lack physical or biological features necessary for pearl darter. The scale of the maps we prepared under the parameters for publication within the Code of Federal Regulations may not reflect the exclusion of such developed lands. Any such lands inadvertently left inside critical habitat boundaries shown on the maps of this rule have been excluded by text in the rule and are not designated as critical habitat. Therefore, a Federal action involving these lands will not trigger section 7 consultation with respect to critical habitat and the requirement of no adverse modification unless the specific action would affect the physical or biological features in the adjacent critical habitat.

We are designating as critical habitat areas that we have determined are occupied at the time of listing (i.e., currently occupied) and that contain one or more of the physical or biological features that are essential to support life-history processes of the species. We have determined that occupied areas are inadequate to ensure the conservation of the species. Therefore, we are designating additional areas as unoccupied critical habitat. We have determined that these units are habitat for the species and will both contribute to the conservation of the species and contain at least one physical or biological features essential to the conservation of the species (see description for *Unit 2: Strong River Unit* below for explanation).

The two units are designated based on one or more of the physical or biological features being present to support pearl darter's life-history processes. One unit contains

all of the identified physical or biological features and supports multiple life-history processes. The other unit contains only some of the physical or biological features necessary to support the pearl darter's particular use of that habitat.

The critical habitat designation is defined by the map or maps, as modified by any accompanying regulatory text, presented at the end of this document under **Regulation Promulgation**. We include more detailed information on the boundaries of the critical habitat designation in the preamble of this document. We will make the coordinates or plot points or both on which each map is based available to the public on <https://www.regulations.gov> at Docket No. FWS-R4-ES-2020-0062, on our internet site <https://fws.gov/office/mississippi-ecological-services>, and at the field office responsible for the designation (see **FOR FURTHER INFORMATION CONTACT**).

### Final Critical Habitat Designation

We are designating approximately 524 river mi (843 river km) in two units as critical habitat for pearl darter. The critical habitat areas we describe below constitute our current best assessment of areas that meet the definition of critical habitat for pearl darter. The two areas designated as critical habitat are: (1) Pascagoula River Unit and (2) Strong River Unit. Table 1 shows the critical habitat units and the approximate area of each unit.

TABLE OF CRITICAL HABITAT UNITS FOR PEARL DARTER  
[UNIT LENGTH ESTIMATES INCLUDE ONLY STREAM CHANNELS WITHIN THE ORDINARY HIGH-WATER LINE.]

Unit	Riparian Land Ownership					
	Occupancy	Federal mi (km)	State mi (km)	County mi (km)	Private mi (km)	Total mi (km)
1. Pascagoula River	Occupied	45 (72)*	76 (122)*		380 (611)	494 (794)*
2. Strong River	Unoccupied			0.4 (0.6)	30 (48.4)	30 (49)
Total mi (km)		45 (72)*	76 (122)*	0.4 (0.6)	410 (659.4)	524 (843)*

\*7 mi (11 km) of pearl darter critical habitat stream miles shared between State and Federal lands.

Note: Area sizes may not sum due to rounding.

We present brief descriptions of all units, and reasons why they meet the definition of critical habitat for pearl darter, below.

*Unit 1: Pascagoula River Unit*

Unit 1 consists of 494 river mi (794 river km) of occupied connected river and stream channels within the Pascagoula River drainage in Mississippi, including:

- 63 mi (102 km) of the Pascagoula River channel from its confluence with the West Pascagoula River in Jackson County, upstream to the confluence of the Leaf and Chickasawhay Rivers in George County;
- 80 mi (129 km) of Big Black Creek/Black Creek channel from its confluence with the Pascagoula River in Jackson County, upstream to U.S. Highway 49 Bridge in Forrest County;
- 160 mi (257 km) of Chickasawhay River channel from its confluence with the Leaf River just north of Enterprise, Clarke County, upstream to the confluence of Okatibbee Creek and Chunky River in Clarke County;
- 28 mi (45 km) of Chunky River channel from its confluence with Okatibbee Creek in Clarke County, upstream to the third (most upstream) Highway 80 Crossing in Newton County;
- 119 mi (192 km) of Leaf River channel from its confluence with the Chickasawhay River in George County, upstream to the bridge crossing at U.S. Highway 84 in Covington County;
- 15 mi (24 km) of Bouie River channel from its confluence with the Leaf River, upstream to the confluence of Okatoma Creek in Forrest County; and
- 28 mi (45 km) of Okatoma Creek from its confluence with the Bouie River in Forrest County, upstream to the bridge crossing at U.S. Highway 84 in Covington County.

The riparian lands (channel borders) in this unit are generally privately owned agricultural or silvicultural lands with short reaches owned and managed by the U.S. Forest Service or the State (see table above). All channel segments in Unit 1 are occupied by the pearl darter, and the unit contains all the physical or biological features essential to the conservation of the species, including deep pools, runs, and bends and scour holes; mixtures of bottom substrates of fine and coarse sand, silt, loose clay, coarse gravel, fine and coarse particulate organic matter, and woody debris; a natural hydrograph with flows and water quality that currently support the normal life stages of the pearl darter; and the species' prey sources.

Special management considerations and protections that may be required to address threats within the unit include minimizing surface water withdrawals or other actions that alter stream flow; reducing excessive use of manures, fertilizers, and pesticides near stream channels; improving treatment of wastewater discharged from permitted facilities; and implementing practices that protect or restore riparian buffer areas along stream corridors.

#### *Unit 2: Strong River Unit*

Unit 2 consists of 30 river mi (49 river km) of unoccupied habitat in the Strong River channel from its confluence with the Pearl River, upstream to U.S. Highway 49, in Simpson County, Mississippi. The riparian lands in this unit are generally privately owned agricultural or silvicultural lands with a short channel reach (0.39 mi (0.63 km)) owned and operated by the Simpson County Park Commission (see table above). Unit 2 is not within the geographic range occupied by the pearl darter at the time of listing, but this area was historically known to provide spawning and recruitment habitat prior to the species' extirpation from the Pearl River drainage. This unit currently provides some of the physical or biological features essential to the conservation of the pearl darter, including a stable channel with bottom substrates of fine and coarse sand, silt, loose clay,

coarse gravel, fine and coarse particulate organic matter, and woody debris; a natural hydrograph with flows to support the normal life stages of the pearl darter; and the species' prey sources. Further evidence of the presence of physical or biological features within this reach of the Strong River is demonstrated by recent increases in other benthic fish species (e.g., frecklebelly madtom) that declined concurrent with the extirpation of the pearl darter (Piller et al. 2004, pp. 1007–1011; Wagner et al. 2018, pp. 4–5).

As described above, the best available information demonstrates that the pearl darter disappeared from the entire Pearl River and all known tributary segments virtually simultaneously. Therefore, it is possible that a series of back-to-back stochastic events or a single catastrophic event could significantly reduce or extirpate the surviving pearl darter population within the Pascagoula River drainage. Due to the species' lack of redundancy, its naturally small numbers within the Pascagoula River drainage, and its short life span, the pearl darter is more vulnerable to existing and future threats, including habitat degradation and loss, catastrophic weather events, and introduced species. This unit would serve to protect habitat needed to reestablish a wild population within the historical range in the Pearl River drainage and recover the species. Reestablishing a population of the pearl darter within Unit 2 also would increase the species' redundancy and restore ecological representation, better ensuring its survival if a stochastic event were to impact the Pascagoula River population. This unit is essential for the conservation of the species because it will provide habitat for range expansion in known historical habitat that is necessary to increase viability of the pearl darter by increasing its resiliency, redundancy, and representation.

The need for reintroduction of the pearl darter into the Pearl River drainage has been recognized and is being discussed by our conservation partners. The landowner of the type locality (location where the species was described) within the Strong River unit has been working with the Service and MDWFP to regularly monitor for the presence of

the pearl darter and other benthic fish and expressed interest in reestablishing the species on the property. Methods and facilities for propagating the species have been developed, tested, and proven at a Service fish hatchery. Accordingly, we are reasonably certain this unit will contribute to the conservation of the pearl darter.

## **Effects of Critical Habitat Designation**

### *Section 7 Consultation*

Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat of such species.

We published a final rule revising the definition of destruction or adverse modification on August 27, 2019 (84 FR 44976). Destruction or adverse modification means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species.

If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with us. Examples of actions that are subject to the section 7 consultation process are actions on State, Tribal, local, or private lands that require a Federal permit (such as a permit from the U.S. Army Corps of Engineers under section 404 of the Clean Water Act (33 U.S.C. 1251 *et seq.*) or a permit from the Service under section 10 of the Act) or that involve some other Federal action (such as funding from the Federal Highway Administration, Federal Aviation Administration, or the Federal Emergency Management Agency). Federal actions not affecting listed species or critical habitat—and actions on State, Tribal, local, or private lands that are not federally funded, authorized, or carried out by a Federal agency—do not require section 7 consultation.



Compliance with the requirements of section 7(a)(2) is documented through our issuance of:

(1) A concurrence letter for Federal actions that may affect, but are not likely to adversely affect, listed species or critical habitat; or

(2) A biological opinion for Federal actions that may affect, and are likely to adversely affect, listed species or critical habitat.

When we issue a biological opinion concluding that a project is likely to jeopardize the continued existence of a listed species and/or destroy or adversely modify critical habitat, we provide reasonable and prudent alternatives to the project, if any are identifiable, that would avoid the likelihood of jeopardy and/or destruction or adverse modification of critical habitat. We define “reasonable and prudent alternatives” (at 50 CFR 402.02) as alternative actions identified during consultation that:

(1) Can be implemented in a manner consistent with the intended purpose of the action,

(2) Can be implemented consistent with the scope of the Federal agency’s legal authority and jurisdiction,

(3) Are economically and technologically feasible, and

(4) Would, in the Service Director’s opinion, avoid the likelihood of jeopardizing the continued existence of the listed species and/or avoid the likelihood of destroying or adversely modifying critical habitat.

Reasonable and prudent alternatives can vary from slight project modifications to extensive redesign or relocation of the project. Costs associated with implementing a reasonable and prudent alternative are similarly variable.

Regulations at 50 CFR 402.16 set forth requirements for Federal agencies to reinstitute formal consultation on previously reviewed actions. These requirements apply when the Federal agency has retained discretionary involvement or control over the

action (or the agency's discretionary involvement or control is authorized by law) and, subsequent to the previous consultation: (a) if the amount or extent of taking specified in the incidental take statement is exceeded; (b) if new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (c) if the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or (d) if a new species is listed or critical habitat designated that may be affected by the identified action.

In such situations, Federal agencies sometimes may need to request reinitiation of consultation with us, but Congress also enacted some exceptions in 2018 to the requirement to reinitiate consultation on certain land management plans on the basis of a new species listing or new designation of critical habitat that may be affected by the subject Federal action. See 2018 Consolidated Appropriations Act, Pub. L. 115-141, Div, O, 132 Stat. 1059 (2018).

#### *Application of the "Adverse Modification" Standard*

The key factor related to the destruction or adverse modification determination is whether implementation of the proposed Federal action directly or indirectly alters the designated critical habitat in a way that appreciably diminishes the value of the critical habitat as a whole for the conservation of the listed species. As discussed above, the role of critical habitat is to support physical or biological features essential to the conservation of a listed species and provide for the conservation of the species.

Section 4(b)(8) of the Act requires us to briefly evaluate and describe, in any proposed or final regulation that designates critical habitat, activities involving a Federal action that may violate section 7(a)(2) of the Act by destroying or adversely modifying such habitat, or that may be affected by such designation.

Activities that we may, during a consultation under section 7(a)(2) of the Act, consider likely to destroy or adversely modify critical habitat include, but are not limited to:

(1) Actions that would block or disconnect stream and river channels. Such activities could include, but are not limited to, the construction of dams or weirs, channelization, and mining. These activities could result in destruction of habitat, block movements between seasonal habitats, fragment and isolate subpopulations within critical habitat units, and/or affect flows within or into critical habitat.

(2) Actions that would affect channel substrates and stability. Such activities include channelization, impoundment, mining, road and bridge construction, removal of riparian vegetation, and land clearing within or into critical habitat. These activities may lead to changes in channel substrates, erosion of the streambed and banks, and excessive sedimentation that could degrade pearl darter habitat.

(3) Actions that would reduce flow levels or alter flow regimes within or into critical habitat. These could include, but are not limited to, activities that block or lower surface flow or groundwater levels, including channelization, impoundment, groundwater pumping, and surface water withdrawal or diversion. Such activities can result in long-term changes in stream flows that affect habitat quality and quantity for the darter and its prey.

(4) Actions that would affect water chemistry or temperature or introduce pollutants and nutrients at levels above State of Mississippi criteria. Such activities include, but are not limited to, the release of chemical pollutants, biological pollutants, or heated effluents into the surface water or connected groundwater at a point source or by dispersed release (non-point source). These activities could alter water quality conditions to levels that are beyond the tolerances of the pearl darter or its prey species.

(5) Actions that would result in the introduction, spread, or augmentation of nonnative aquatic species in occupied stream segments or in stream segments that are hydrologically connected to occupied stream segments, even if those segments are occasionally intermittent, or in the introduction of other species that compete with or prey on the pearl darter. Possible actions could include, but are not limited to, stocking of non-native fishes or other related actions. These activities also can introduce parasites or disease or affect the growth, reproduction, and survival of the pearl darter.

## **Exemptions**

### *Application of Section 4(a)(3) of the Act*

Section 4(a)(3)(B)(i) of the Act (16 U.S.C. 1533(a)(3)(B)(i)) provides that the Secretary shall not designate as critical habitat any lands or other geographical areas owned or controlled by the Department of Defense (DoD), or designated for its use, that are subject to an integrated natural resources management plan (INRMP) prepared under section 101 of the Sikes Act Improvement Act of 1997 (16 U.S.C. 670a), if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation. There are no DoD lands with a completed INRMP within the final critical habitat designation.

### **Consideration of Impacts under Section 4(b)(2) of the Act**

Section 4(b)(2) of the Act states that the Secretary shall designate and make revisions to critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, national security impact, and any other relevant impact of specifying any particular area as critical habitat. The Secretary may exclude an area from critical habitat based on economic impacts, impacts on national security, or any other relevant impacts. Exclusion decisions are governed by the regulations at 50 CFR 424.19 and the Policy Regarding Implementation of Section 4(b)(2) of the Endangered Species Act, 81 FR 7226 (Feb. 11, 2016) (2016 Policy)—both of which were developed

jointly with the National Marine Fisheries Service (NMFS). We also refer to a 2008 Department of the Interior Solicitor's opinion entitled "The Secretary's Authority to Exclude Areas from a Critical Habitat Designation under Section 4(b)(2) of the Endangered Species Act" (M-37016). We explain each decision to exclude areas, as well as decisions not to exclude, to demonstrate that the decision is reasonable.

The Secretary may exclude any particular area if she determines that the benefits of such exclusion outweigh the benefits of including such area as part of the critical habitat, unless she determines, based on the best scientific data available, that the failure to designate such area as critical habitat will result in the extinction of the species. In making the determination to exclude a particular area, the statute on its face, as well as the legislative history, are clear that the Secretary has broad discretion regarding which factor(s) to use and how much weight to give to any factor.

#### *Exclusions Based on Economic Impacts*

Section 4(b)(2) of the Act and its implementing regulations require that we consider the economic impact that may result from a designation of critical habitat. In order to consider economic impacts, we prepared an incremental effects memorandum (IEM) and screening analysis which, together with our narrative and interpretation of effects, we consider our economic analysis of the critical habitat designation and related factors (IEc 2020, entire; IEc 2021, entire). The analysis, dated July 13, 2020, was made available for public review from July 13, 2021, through September 13, 2021 (IEc 2020, entire). The economic analysis addressed probable economic impacts of critical habitat designation for the pearl darter. Following the close of the comment period, we reviewed and evaluated all information submitted during the comment period that may pertain to our consideration of the probable incremental economic impacts of this critical habitat designation. Additional information relevant to the probable incremental economic impacts of the critical habitat designation for the pearl darter is summarized below and

available in the screening analysis for the pearl darter (IEc 2020, entire; IEC 2021, entire), available at <https://www.regulations.gov>.

We received public comment on our draft economic analysis during the public comment period and updated the analysis based on public comments. The economic analysis now considers the addition of 6.5 river mi (10.5 river km) of critical habitat in the Chunky River. Because the initial assessment considered economic impacts across the entire Pascagoula River basin and the additional river segment falls within the boundary of this watershed, the updates made to the economic analysis did not change the overall conclusions of the analysis.

As part of our screening analysis, we considered the types of economic activities that are likely to occur within the areas likely affected by the critical habitat designation. In our evaluation of the probable incremental economic impacts that may result from the proposed designation of critical habitat for the pearl darter, first we identified in the IEM dated April 21, 2020, probable incremental economic impacts associated with the following categories of activities: (1) roadway and bridge construction and repair; (2) commercial or residential development; (3) dredging; (4) groundwater pumping; (5) instream dams and diversions; (6) storage, distribution, or discharge of chemical pollutants; (7) oil and gas; (8) utilities; (9) water quantity and supply; and (10) water quality. We considered each industry or category individually. Additionally, we considered whether their activities have any Federal involvement. Critical habitat designation generally will not affect activities that do not have any Federal involvement; under the Act, designation of critical habitat only affects activities conducted, funded, permitted, or authorized by Federal agencies. In areas where the pearl darter is present, Federal agencies already are required to consult with the Service under section 7 of the Act on activities they fund, permit, or implement that may affect the species. If we finalize this proposed critical habitat designation, consultations to avoid the destruction or

adverse modification of critical habitat would be incorporated into the existing consultation process.

In our IEM, we attempted to clarify the distinction between the effects that will result from the species being listed and those attributable to the critical habitat designation (i.e., difference between the jeopardy and adverse modification standards) for the pearl darter's critical habitat. The following specific circumstances in this case help to inform our evaluation: (1) The essential physical or biological features identified for critical habitat are the same features essential for the life requisites of the species, and (2) any actions that would result in sufficient harm or harassment to constitute jeopardy to the pearl darter also would likely adversely affect the essential physical or biological features of critical habitat. The IEM outlines our rationale concerning this limited distinction between baseline conservation efforts and incremental impacts of the designation of critical habitat for this species. This evaluation of the incremental effects has been used as the basis to evaluate the probable incremental economic impacts of this designation of critical habitat.

The critical habitat designation for the pearl darter totals approximately 524 mi (843 km) of river and stream channels in two units. Riparian lands bordering the critical habitat are under private (78 percent), county (0.1 percent), State (15 percent), and Federal (9 percent) ownership. A small portion (1.3 percent) has shared State and Federal ownership. Unit 1 is occupied by the pearl darter and represents 94 percent of the proposed critical habitat. Within this occupied unit, any actions that may affect the species or its habitat would also affect designated critical habitat, and it is unlikely that any additional conservation efforts would be recommended to address the adverse modification standard over and above those recommended as necessary to avoid jeopardizing the continued existence of the pearl darter. Therefore, only administrative costs are expected in actions affecting this unit. While this additional analysis will require

time and resources by both the Federal action agency and the Service, it is believed that, in most circumstances, these costs would not be significant because they are predominantly administrative in nature.

Unit 2 is currently unoccupied by the species but is essential for the conservation of the species. This unit totals 30 mi (49 km) of river and stream channels and comprises 6 percent of the total proposed critical habitat designation. In this unoccupied area, any conservation efforts or associated probable impacts would be considered incremental effects attributed to the critical habitat designation. However, two threatened species, Gulf sturgeon and ringed map turtle currently occupy this unit. Conservation efforts to protect these species also would protect pearl darter critical habitat.

The economic analysis finds that the total annual incremental costs of critical habitat designation for the pearl darter are not anticipated to reach \$100 million in any given year based on the anticipated annual number of consultations and associated administrative costs, which are not expected to exceed \$710,000 in any year.

In Unit 1, which constitutes 94 percent of the critical habitat area, the activities that may affect the critical habitat are already subject to section 7 consultation due to the presence of pearl darter. We determined that the project modification recommendations made to avoid jeopardy to the pearl darter also would result in the avoidance of adverse modification. Thus, for projects and activities occurring in Unit 1, no additional project modification recommendations are likely to result from this critical habitat rule and costs would be limited to additional administrative effort.

A relatively small fraction (6 percent) of the critical habitat designation is in Unit 2, which is not currently occupied by the species. In these areas, activities that may affect the critical habitat for the pearl darter are also already subject to section 7 consultation due to the presence of other listed species (Gulf sturgeon and ringed map turtle) with similar habitat requirements. Additionally, activities that may affect pearl darter critical



habitat in Unit 2 generally implement project modification recommendations from a standardized set provided in the Mississippi Standard Local Operations Procedures for Endangered Species (SLOPES) agreement. Through this agreement that was entered into in June 2017, the U.S. Army Corps of Engineers (COE) and the Service have established routine procedures for jointly implementing section 7 requirements for all projects that require COE permits. The agreement requires the COE to consult species-specific SLOPES documents to determine if a project is expected to adversely affect the species or its habitat. As part of the agreement, species-specific avoidance and minimization measures have been established for COE projects. The measures described for the pearl darter are similar to the measures described for overlapping species. Because the COE addresses permitting for projects with water impacts, all projects with a Federal nexus in the pearl darter critical habitat are likely to follow the Mississippi SLOPES procedures and recommendations. Therefore, even absent critical habitat designation, these activities are likely to avoid adverse effects on the habitat.

As discussed above, we considered the economic impacts of the critical habitat designation, and the Secretary is not exercising her discretion to exclude any areas from this designation of critical habitat for the pearl darter based on economic impacts.

#### *Exclusions Based on Impacts on National Security and Homeland Security*

In preparing this rule, we have determined that there are no lands within the designated critical habitat for pearl darter that are owned or managed by the DoD or Department of Homeland Security, and, therefore, we anticipate no impact on national security or homeland security. We did not receive any additional information during the public comment period for the proposed designation regarding impacts of the designation on national security or homeland security that would support excluding any specific areas from the final critical habitat designation under authority of section 4(b)(2) and our implementing regulations at 50 CFR 424.19, as well as the 2016 Policy.

### *Exclusions Based on Other Relevant Impacts*

Under section 4(b)(2) of the Act, we consider any other relevant impacts, in addition to economic impacts and impacts on national security as discussed above. To identify other relevant impacts that may affect the exclusion analysis, we consider a number of factors, including whether there are permitted conservation plans covering the species in the area such as HCPs, safe harbor agreements (SHAs), or candidate conservation agreements with assurances (CCAAs), or whether there are non-permitted conservation agreements and partnerships that would be encouraged by designation of, or exclusion from, critical habitat. In addition, we look at whether Tribal conservation plans or partnerships, Tribal resources, or government-to-government relationships of the United States with Tribal entities may be affected by the designation. We also consider any State, local, social, or other impacts that might occur because of the designation.

We are not excluding any areas from critical habitat. In preparing this final rule, we have determined that there are currently no HCPs or other management plans for the pearl darter, and the designation does not include any Tribal lands or trust resources. We anticipate no impact on Tribal lands, partnerships, or HCPs from this final critical habitat designation. We did not receive any information during the public comment period for the proposed rule regarding other relevant impacts to support excluding any specific areas from the final critical habitat designation under the authority of section 4(b)(2) and our implementing regulations at 50 CFR 424.19, as well as the 2016 Policy. Accordingly, the Secretary is not exercising her discretion to exclude any areas from this final designation based on other relevant impacts.

### **Required Determinations**

*Regulatory Planning and Review (Executive Orders 12866 and 13563)*

Executive Order 12866 provides that the Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget will review all significant rules. OIRA has determined that this rule is not significant.

Executive Order 13563 reaffirms the principles of E.O. 12866 while calling for improvements in the nation's regulatory system to promote predictability, to reduce uncertainty, and to use the best, most innovative, and least burdensome tools for achieving regulatory ends. The executive order directs agencies to consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public where these approaches are relevant, feasible, and consistent with regulatory objectives. E.O. 13563 emphasizes further that regulations must be based on the best available science and that the rulemaking process must allow for public participation and an open exchange of ideas. We have developed this proposed rule in a manner consistent with these requirements.

*Regulatory Flexibility Act (5 U.S.C. 601 et seq.)*

Under the Regulatory Flexibility Act (RFA; 5 U.S.C. 601 et seq.), as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA; 5 U.S.C. 801 et seq.), whenever an agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effects of the rule on small entities (i.e., small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of the agency certifies the rule will not have a significant economic impact on a substantial number of small entities. The SBREFA amended the RFA to require Federal agencies to provide a certification statement of the factual basis for certifying that the rule will not have a significant economic impact on a substantial number of small entities.

According to the Small Business Administration, small entities include small organizations such as independent nonprofit organizations; small governmental jurisdictions, including school boards and city and town governments that serve fewer than 50,000 residents; and small businesses (13 CFR 121.201). Small businesses include manufacturing and mining concerns with fewer than 500 employees, wholesale trade entities with fewer than 100 employees, retail and service businesses with less than \$5 million in annual sales, general and heavy construction businesses with less than \$27.5 million in annual business, special trade contractors doing less than \$11.5 million in annual business, and agricultural businesses with annual sales less than \$750,000. To determine if potential economic impacts to these small entities are significant, we considered the types of activities that might trigger regulatory impacts under this designation as well as types of project modifications that may result. In general, the term “significant economic impact” is meant to apply to a typical small business firm’s business operations.

Under the RFA, as amended, and following recent court decisions, Federal agencies are required to evaluate the potential incremental impacts of rulemaking on those entities directly regulated by the rulemaking itself; in other words, the RFA does not require agencies to evaluate the potential impacts to indirectly regulated entities. The regulatory mechanism through which critical habitat protections are realized is section 7 of the Act, which requires Federal agencies, in consultation with the Service, to ensure that any action authorized, funded, or carried out by the agency is not likely to destroy or adversely modify critical habitat. Therefore, under section 7, only Federal action agencies are directly subject to the specific regulatory requirement (avoiding destruction and adverse modification) imposed by critical habitat designation. Consequently, it is our position that only Federal action agencies will be directly regulated by this designation. There is no requirement under the RFA to evaluate the potential impacts to entities not

directly regulated. Moreover, Federal agencies are not small entities. Therefore, because no small entities will be directly regulated by this rulemaking, we certify that this critical habitat designation will not have a significant economic impact on a substantial number of small entities.

During the development of this final rule, we reviewed and evaluated all information submitted during the comment period on the July 13, 2021, proposed rule (86 FR 36678) that may pertain to our consideration of the probable incremental economic impacts of this critical habitat designation. Based on this information, we affirm our certification that this critical habitat designation will not have a significant economic impact on a substantial number of small entities, and a regulatory flexibility analysis is not required.

*Energy Supply, Distribution, or Use—Executive Order 13211*

Executive Order 13211 (Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use) requires agencies to prepare statements of Energy Effects when undertaking certain actions. In our economic analysis, we did not find that this critical habitat designation will significantly affect energy supplies, distribution, or use. Therefore, this action is not a significant energy action, and no statement of energy effects is required.

*Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.)*

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.), we make the following finding:

(1) This rule will not produce a Federal mandate. In general, a Federal mandate is a provision in legislation, statute, or regulation that would impose an enforceable duty upon State, local, or Tribal governments, or the private sector, and includes both “Federal intergovernmental mandates” and “Federal private sector mandates.” These terms are defined in 2 U.S.C. 658(5)–(7). “Federal intergovernmental mandate” includes a

regulation that “would impose an enforceable duty upon State, local, or Tribal governments” with two exceptions. It excludes “a condition of Federal assistance.” It also excludes “a duty arising from participation in a voluntary Federal program,” unless the regulation “relates to a then-existing Federal program under which \$500,000,000 or more is provided annually to State, local, and Tribal governments under entitlement authority,” if the provision would “increase the stringency of conditions of assistance” or “place caps upon, or otherwise decrease, the Federal Government’s responsibility to provide funding,” and the State, local, or Tribal governments “lack authority” to adjust accordingly. At the time of enactment, these entitlement programs were: Medicaid; Aid to Families with Dependent Children work programs; Child Nutrition; Food Stamps; Social Services Block Grants; Vocational Rehabilitation State Grants; Foster Care, Adoption Assistance, and Independent Living; Family Support Welfare Services; and Child Support Enforcement. “Federal private sector mandate” includes a regulation that “would impose an enforceable duty upon the private sector, except (i) a condition of Federal assistance or (ii) a duty arising from participation in a voluntary Federal program.”

The designation of critical habitat does not impose a legally binding duty on non-Federal Government entities or private parties. Under the Act, the only regulatory effect is that Federal agencies must ensure that their actions are not likely to destroy or adversely modify critical habitat under section 7. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. Furthermore, to the extent that non-Federal entities are indirectly impacted because they receive Federal assistance or participate in a voluntary Federal aid program, the Unfunded Mandates

Reform Act would not apply, nor would critical habitat shift the costs of the large entitlement programs listed above onto State governments.

(2) We do not believe that this rule will significantly or uniquely affect small governments because it will not produce a Federal mandate of \$100 million or greater in any year, that is, it is not a “significant regulatory action” under the Unfunded Mandates Reform Act. The designation of critical habitat imposes no obligations on State or local governments. Therefore, a Small Government Agency Plan is not required.

*Takings—Executive Order 12630*

In accordance with E.O. 12630 (Government Actions and Interference with Constitutionally Protected Private Property Rights), we have analyzed the potential takings implications of designating critical habitat for the pearl darter in a takings implications assessment. The Act does not authorize us to regulate private actions on private lands or confiscate private property as a result of critical habitat designation. Designation of critical habitat does not affect land ownership or establish any closures or restrictions on use of or access to the designated areas. Furthermore, the designation of critical habitat does not affect landowner actions that do not require Federal funding or permits, nor does it preclude development of habitat conservation programs or issuance of incidental take permits to permit actions that do require Federal funding or permits to go forward. However, Federal agencies are prohibited from carrying out, funding, or authorizing actions that would destroy or adversely modify critical habitat. A takings implications assessment has been completed and concludes that this designation of critical habitat for the pearl darter does not pose significant takings implications for lands within or affected by the designation.

*Federalism—Executive Order 13132*

In accordance with E.O. 13132 (Federalism), this rule does not have significant federalism effects. A federalism summary impact statement is not required. In keeping

with Department of the Interior and Department of Commerce policy, we requested information from, and coordinated development of this critical habitat designation with, appropriate State resource agencies. From a federalism perspective, the designation of critical habitat directly affects only the responsibilities of Federal agencies. The Act imposes no other duties with respect to critical habitat, either for States and local governments, or for anyone else. As a result, the rule does not have substantial direct effects either on the States, or on the relationship between the national government and the States, or on the distribution of powers and responsibilities among the various levels of government. The designation may have some benefit to these governments because the areas that contain the features essential to the conservation of the species are more clearly defined, and the physical or biological features of the habitat necessary for the conservation of the species are specifically identified. This information does not alter where and what federally sponsored activities may occur. However, it may assist State and local governments in long-range planning because they no longer have to wait for case-by-case section 7 consultations to occur.

Where State and local governments require approval or authorization from a Federal agency for actions that may affect critical habitat, consultation under section 7(a)(2) of the Act will be required. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency.

*Civil Justice Reform—Executive Order 12988*

In accordance with Executive Order 12988 (Civil Justice Reform), the Office of the Solicitor has determined that the rule will not unduly burden the judicial system and that it meets the requirements of sections 3(a) and 3(b)(2) of the Order. We are



designating critical habitat in accordance with the provisions of the Act. To assist the public in understanding the habitat needs of the species, this final rule identifies the physical or biological features essential to the conservation of the species. The designated areas of critical habitat are presented on maps, and the rule provides several options for the interested public to obtain more detailed location information, if desired.

*Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.)*

This rule does not contain information collection requirements, and a submission to the Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*) is not required. We may not conduct or sponsor and you are not required to respond to a collection of information unless it displays a currently valid OMB control number.

*National Environmental Policy Act (42 U.S.C. 4321 et seq.)*

Regulations adopted pursuant to section 4(a) of the Act are exempt from the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq.*) and do not require an environmental analysis under NEPA. We published a notice outlining our reasons for this determination in the *Federal Register* on October 25, 1983 (48 FR 49244). This includes listing, delisting, and reclassification rules, as well as critical habitat designations and species-specific protective regulations promulgated concurrently with a decision to list or reclassify a species as threatened. The courts have upheld this position (*e.g.*, *Douglas County v. Babbitt*, 48 F.3d 1495 (9th Cir. 1995) (critical habitat); *Center for Biological Diversity v. U.S. Fish and Wildlife Service.*, 2005 WL 2000928 (N.D. Cal. Aug. 19, 2005) (concurrent 4(d) rule)).

*Government-to-Government Relationship with Tribes*

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments),

and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with federally recognized Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with Tribes in developing programs for healthy ecosystems, to acknowledge that Tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to Tribes. We have determined that no Tribal interests fall within the boundaries of the final critical habitat for the pearl darter, so no Tribal lands will be affected by the designation.

### **References Cited**

A complete list of references cited in this rulemaking is available on the internet at <https://www.regulations.gov> and upon request from the Mississippi Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

### **Authors**

The primary authors of this final rule are the staff members of the Fish and Wildlife Service's Species Assessment Team and the Mississippi Ecological Services Field Office.

### **List of Subjects in 50 CFR Part 17**

Endangered and threatened species, Exports, Imports, Plants, Reporting and recordkeeping requirements, Transportation, Wildlife.

### **Regulation Promulgation**

Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

### **PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS**

1. The authority citation for part 17 continues to read as follows:

AUTHORITY: 16 U.S.C. 1361–1407; 1531–1544; and 4201–4245, unless otherwise noted.

2. In § 17.11, in paragraph (h), amend the List of Endangered and Threatened Wildlife by revising the entry for “Darter, pearl” under FISHES to read as follows:

**§ 17.11 Endangered and threatened wildlife.**

\* \* \* \* \*

(h) \* \* \*

Common name	Scientific name	Where listed	Status	Listing citations and applicable rules
* * * * *				
FISHES				
* * * * *				
Darter, pearl	<i>Percina aurora</i>	Wherever found	T	82 FR 43885, 9/20/2017; 50 CFR 17.95(e). <sup>CH</sup>
* * * * *				

3. In § 17.95, amend paragraph (e) by adding an entry for “Pearl Darter (*Percina aurora*)” following the entry for “Niangua Darter (*Etheostoma nianguae*)” to read as follows:

**§ 17.95 Critical habitat—fish and wildlife.**

\* \* \* \* \*

(e) *Fishes.*

\* \* \* \* \*

**PEARL DARTER (*Percina aurora*)**

(1) Critical habitat units are depicted for Clark, Covington, Forrest, George, Greene, Jackson, Jones, Lauderdale, Newton, Perry, Simpson, Stone, and Wayne Counties, Mississippi, on the maps in this entry.

(2) Within these areas, the physical or biological features essential to the conservation of pearl darter consist of the following components:

(i) Unobstructed and stable stream and river channels with:

(A) Connected sequences of channel runs and bends associated with pools and scour holes; and

(B) Bottom substrates consisting of fine and coarse sand, silt, loose clay, coarse gravel, fine and coarse particulate organic matter, or woody debris.

(ii) A natural flow regime necessary to maintain instream habitats and their connectivity.

(iii) Water quality conditions, including cool to warm water temperatures (8 to 30 °C (46.4 to 86.0 °F)), high dissolved oxygen (5.8 to 9.3 mg/l), slightly acidic to basic pH (6.3 to 7.6), and low levels of pollutants and nutrients meeting the current State of Mississippi criteria, as necessary to maintain natural physiological processes for normal behavior, growth, and viability of all life stages of the species.

(iv) Presence of a prey base of small aquatic macroinvertebrates, including larval mayflies, larval caddisflies, larval black flies, ostracods (crustaceans), chironomids (midges), and gastropods (snails).

(3) Critical habitat includes only the stream channels within the ordinary high water line and does not include manmade structures (such as buildings, aqueducts, runways, roads, and other paved areas) and the land on which they are located existing within the legal boundaries on [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

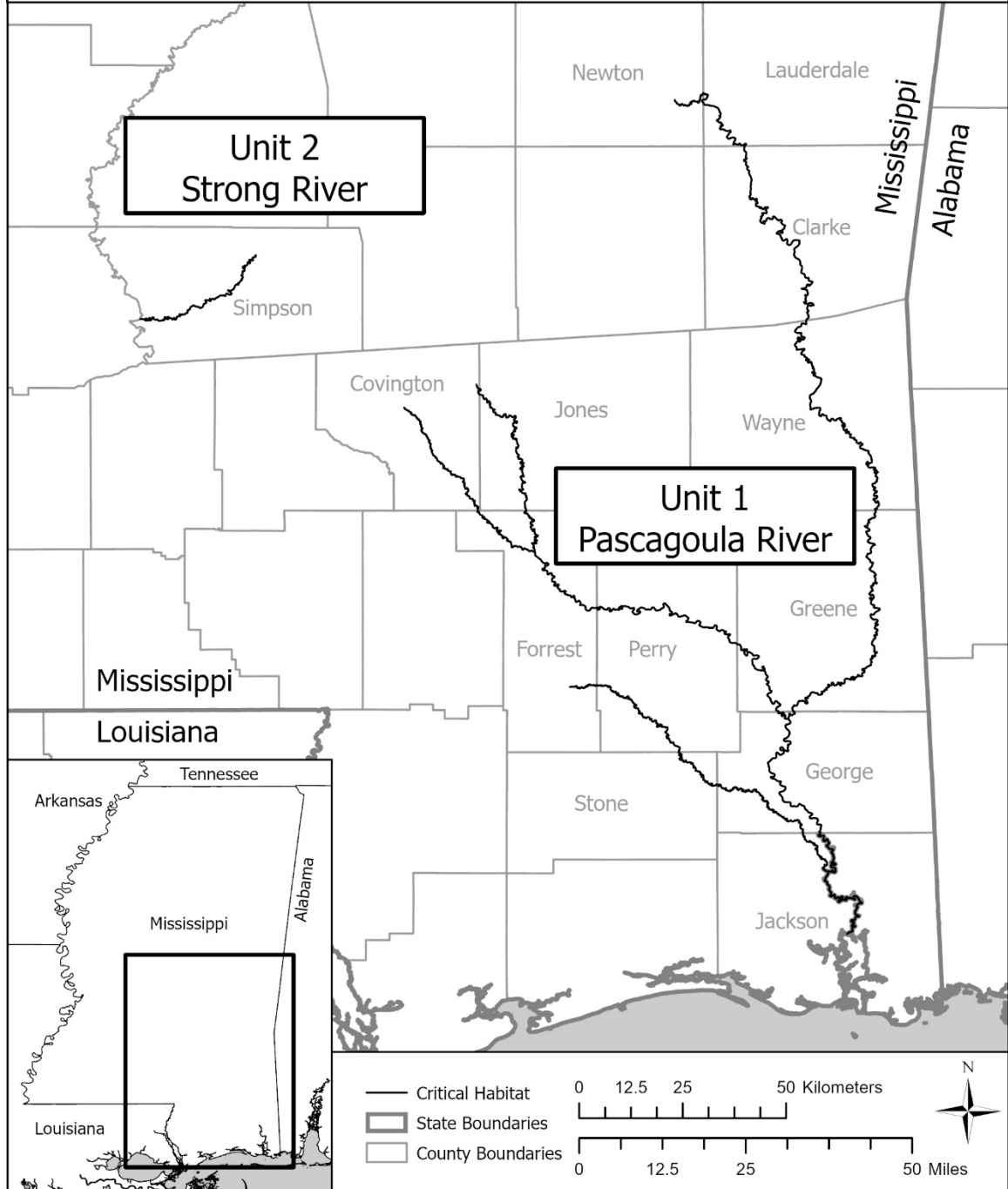
(4) Data layers defining map units were created using U.S. Geological Survey's National Hydrography Dataset flowline data on a base map of State and County boundaries from the U.S. Department of Agriculture's Natural Resources Conservation Service. Critical habitat units were mapped using the Geographic Coordinate System North American 1983 coordinates. The maps in this entry, as modified by any accompanying regulatory text, establish the boundaries of the critical habitat designation. The coordinates or plot points or both on which each map is based are available to the

public at the Service's internet site at <https://fws.gov/office/mississippi-ecological-services>, at <https://www.regulations.gov> at Docket No. FWS-R4-ES-2020-0062, and at the field office responsible for this designation. You may obtain field office location information by contacting one of the Service regional offices, the addresses of which are listed at 50 CFR 2.2.

(5) Index map follows:

Figure 1 to Pearl Darter (*Percina aurora*) paragraph (5)

# Index Map of Critical Habitat for Pearl Darter ( *Percina aurora* )



(6) Unit 1: Pascagoula River drainage, Clarke, Covington, Forrest, George, Greene, Lauderdale, Jackson, Jones, Newton, Perry, Stone, and Wayne Counties, Mississippi.

(i) Unit 1 consists of 494 river miles (mi) (794 river kilometers (km)) of connected river and stream channels within the Pascagoula River drainage, including:

(A) The Pascagoula River from its confluence with the West Pascagoula River in Jackson County, upstream 63 mi (102 km) to the confluence of the Leaf and Chickasawhay Rivers in George County;

(B) The Big Black/Black Creek from its confluence with the Pascagoula River in Jackson County, upstream 80 mi (129 km) to U.S. Highway 49 Bridge in Forrest County;

(C) The Chickasawhay River from its confluence with the Leaf River just north of Enterprise, Clarke County, upstream 160 mi (257 km) to the confluence of Okatibbee Creek and Chunky River in Clarke County;

(D) The Chunky River from its confluence with Okatibbee Creek in Clarke County, upstream 28 mi (45 km) to the third (most upstream) Highway 80 Crossing in Newton County;

(E) The Leaf River from its confluence with the Chickasawhay River in George County, upstream 119 mi (192 km) to the bridge crossing at U.S. Highway 84 in Covington County;

(F) The Bouie River from its confluence with the Leaf River, upstream 15 mi (24 km) to the confluence of Okatoma Creek, in Forrest County; and

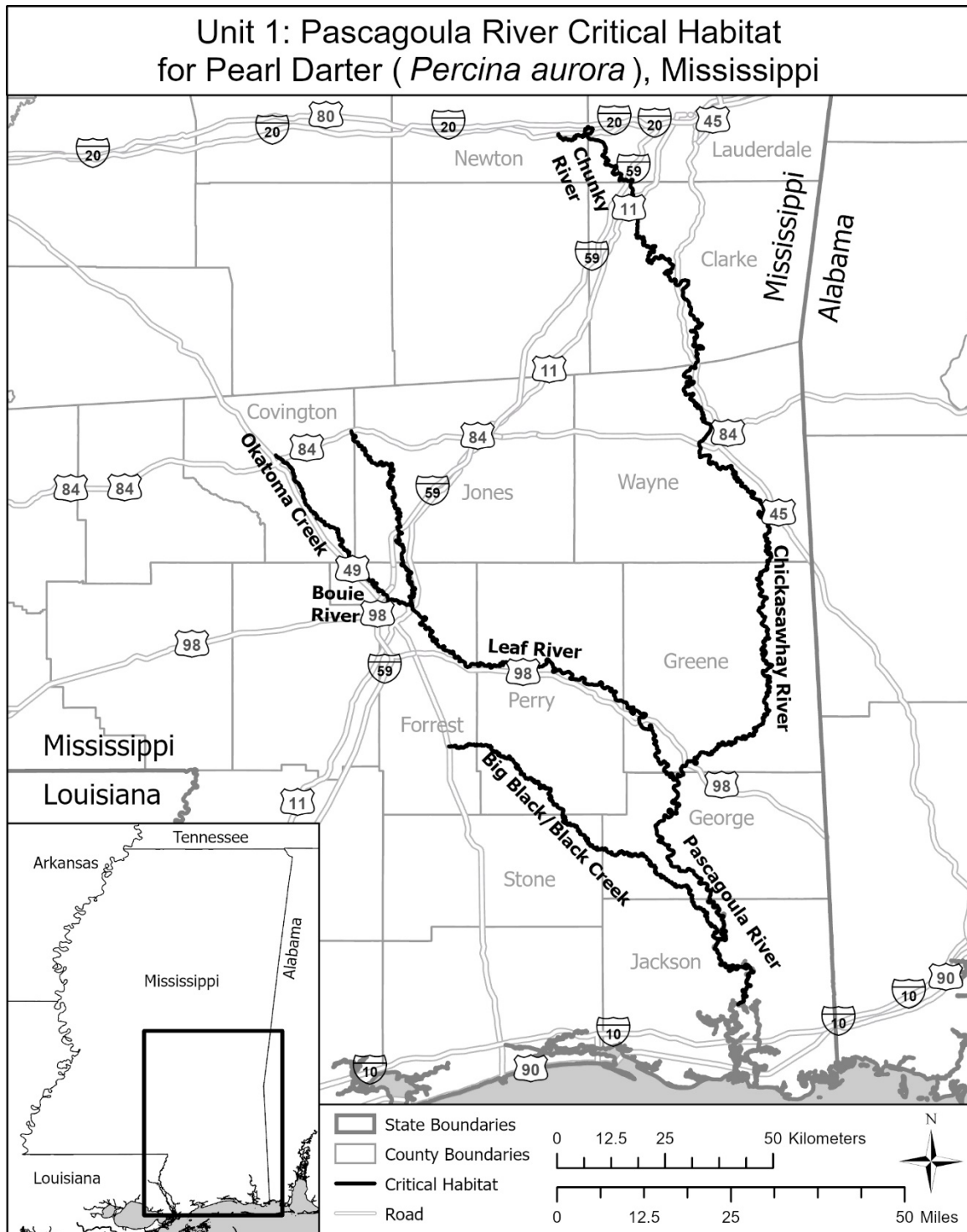
(G) The Okatoma Creek from its confluence with the Bouie River in Forrest County, upstream 28 mi (45 km) to the bridge crossing at U.S. Highway 84 in Covington County.

(ii) The channel borders (and therefore the stream channel bottoms) in Unit 1 are generally privately owned agricultural or silvicultural lands with the exception of 76 mi

(122 km) of the Pascagoula River channel border owned and managed by the Mississippi Department of Wildlife, Fisheries, and Parks, and 45 mi (72 km) owned by the U.S. Forest Service.

(iii) Map of Unit 1 follows:

Figure 2 to Pearl Darter (*Percina aurora*) paragraph (6)(iii)





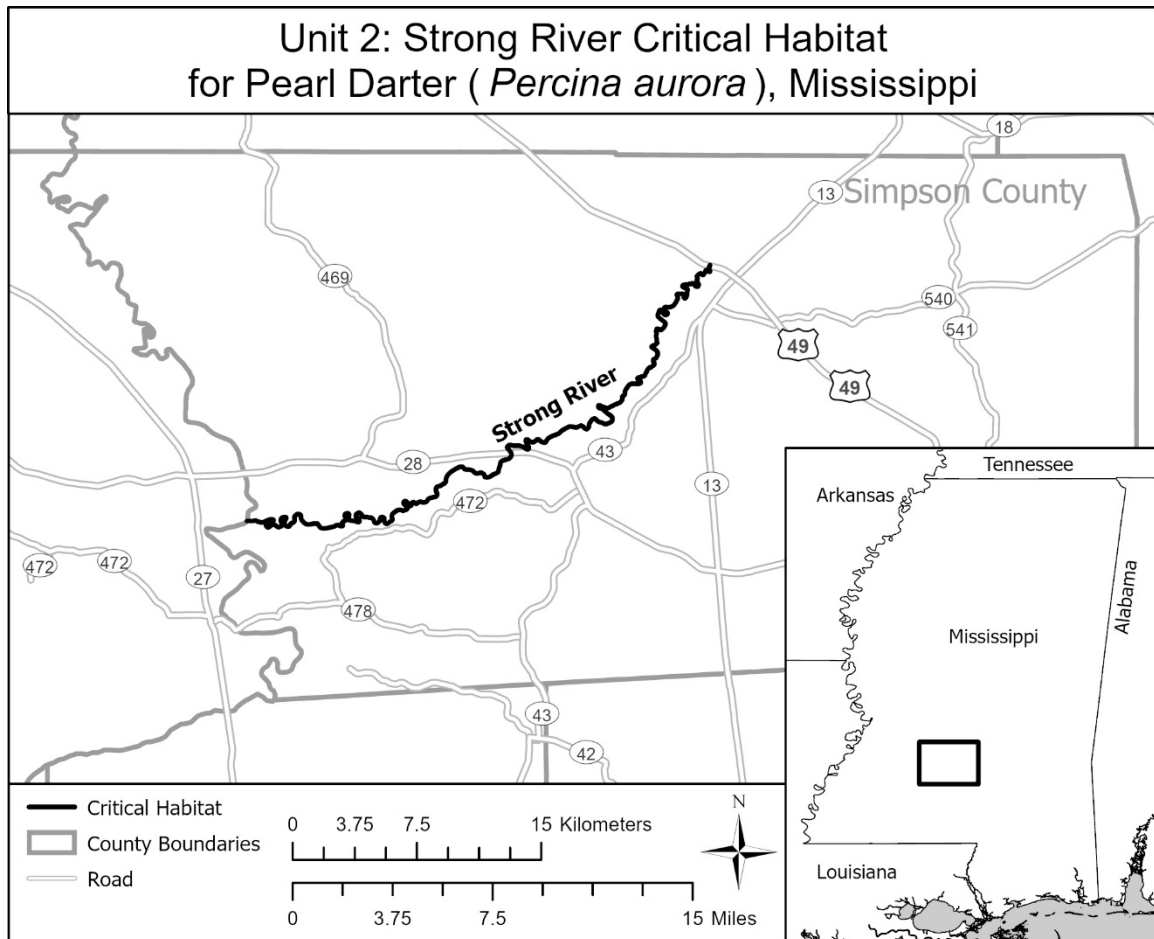
(7) Unit 2: Strong River, Simpson County, Mississippi.

(i) Unit 2 consists of approximately 30 mi (49 km) of the Strong River channel from its confluence with the Pearl River, upstream to U.S. Highway 49 in Simpson County.

(ii) The channel borders (and therefore the stream channel bottoms) in this unit are generally privately owned agricultural or silvicultural lands with the exception of a short channel reach (0.39 mi (0.63 km)) owned and managed by the Simpson County Park Commission.

(iii) Map of Unit 2 follows:

Figure 3 to Pearl Darter (*Percina aurora*) paragraph (7)(iii)



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**Martha Williams,**

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